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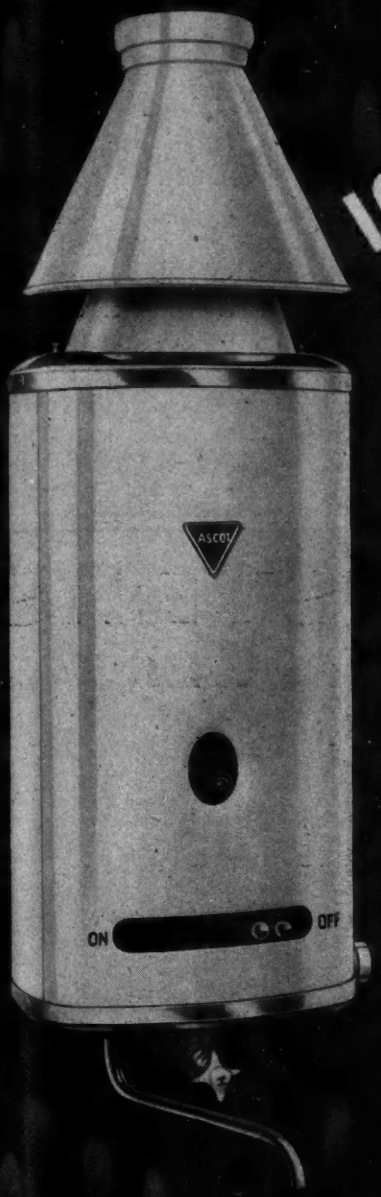

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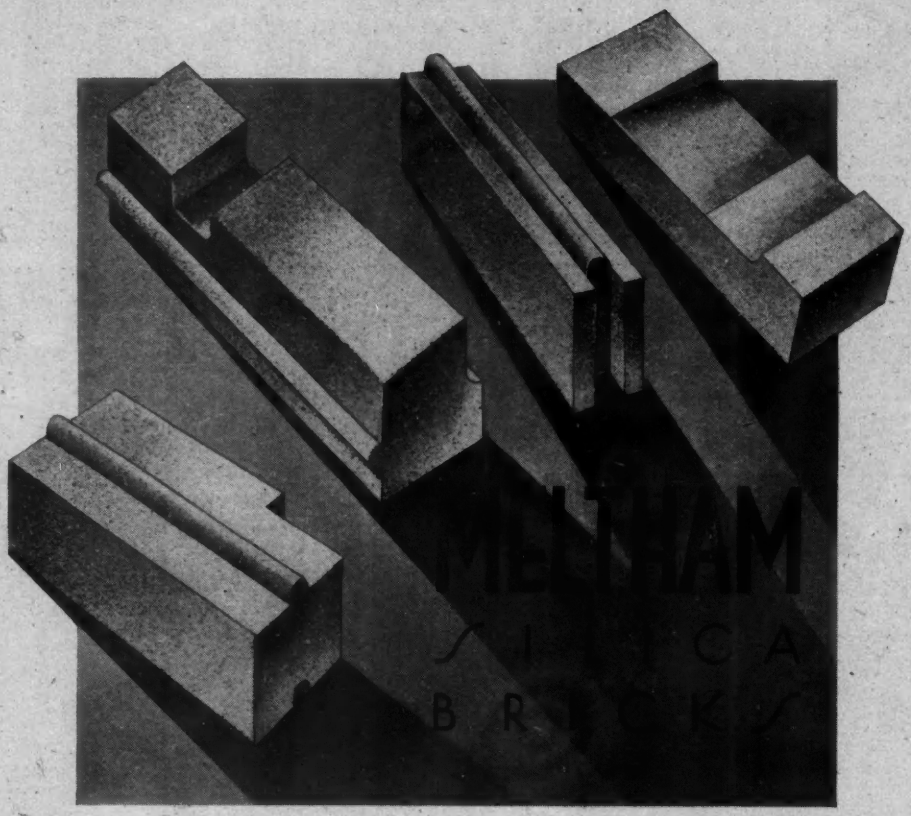

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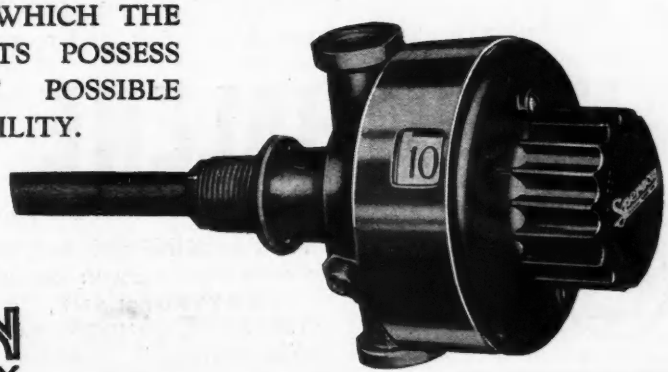

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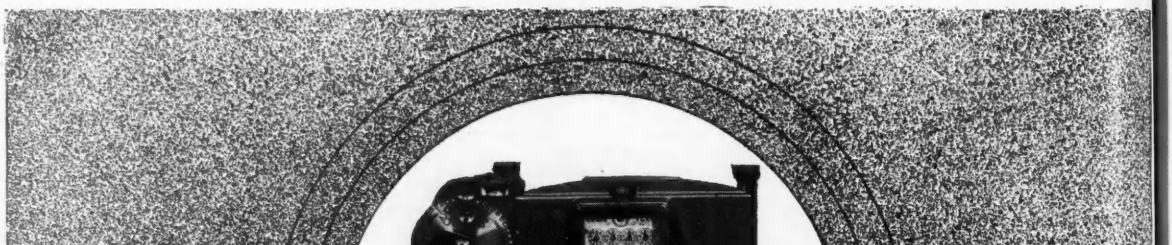

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GAS JOURNAL, NOV. 17, 1943

VOL. 242 95th YEAR No. 4200

EDITORIAL NOTES

DOMESTIC APPLIANCES

IT is, of course, a fact that for four years the gas appliance manufacturers have in no way been turning swords into ploughshares; their major efforts have been put forward in turning from burners to bombs, from stats to stens, as pointed out by Mr. Arthur Forshaw in his Paper to the Midland Association. He asked, "Where do we go from here?" and his answer seemed to be that we don't go very far, and that it is idle to think that the manufacturers will be happily placed with new forms of appliance at the end of the war. In our view and from what we have seen of new designs we suggest that the tone of Mr. Forshaw's Paper was far too gloomy and pessimistic. The story of the manufacturers in regard to the war effort remains to be told. It will, we are certain, be in all respects a worthy record. But gas appliance design has not been left where it was in 1939. The gas consumer and the gas undertaking have something to look forward to when peaceful times return; we have, in fact, hinted at development in both gas and coke burning equipment which is taking place without hindering the contribution of the manufacturers in their task of meeting immediate national needs. We disagree entirely with the Author's contention that any organization which produces new and improved domestic gas appliances immediately after the war will be "strongly suspect as to the totality of its effort during that unhappy though stirring period."

Nor can we agree with the severity of the criticism levelled at the so-called luminous burner operating on gas of the present day. We think there is room for its extended application to both cooking and space heating because of its inherent flexibility and noiselessness. Mr. Forshaw can "hardly see a satisfactory luminous flame griller on present lines—that is, if the flames really are 'luminous' enough to deposit carbon when in contact with solid material." Well, the luminous burner of to-day, as developed conspicuously by Mr. Dean Chandler and described and discussed in our pages, is not luminous in a general sense, and from what we have seen of luminous flame grillers we have considerable faith in their future. In saying which we are not starting a campaign against the well-tried bunsen burner, which will continue to give satisfactory service and will enjoy a sphere of application peculiarly its own. But, if we are not much mistaken, the sphere of use of the "luminous" burner will increase largely after the war, and we think that the "disadvantages" put forward by Mr. Forshaw will not prove of great practical moment.

On another matter—we may be wrong—we gain the impression that Mr. Forshaw has not a very warm place in his heart for the instantaneous type of water heater. Here again he focused attention on its "disadvantages," arguing from what, we suggest, is a faulty premise—that the large instantaneous heater "has been pushed for exclusive universal use in this country." The chief disadvantages? Consumers outrunning their means because of the "unlimited" hot water available, and of undertakings realizing the disadvantages of building up peak loads. We have had considerable experience with different types of water-heating arrangements—coal, coke, and gas, and also oil. For some years we had a flat in London where the sole water-heating equipment consisted of one large and one small instantaneous gas heater. We found this arrangement most acceptable, and we feel that several of our guests would, if we asked them, be glad to give us signed testimonials about the comfort to be obtained from hot baths on tap. Without such "on tap" service we should, satisfactorily to fulfil the demand, have had to install considerable storage, unwarranted by the tenure of the lease of the flat. The point is that we have water-heating appliances of types which fit in with a variety of circumstances and requirements, and neither the instantaneous nor the storage pattern can be regarded as exclusive or universal. This element of flexibility is a very strong asset indeed—and the field is vast enough for the inclusion of all.

TAKING STOCK

IF on reading the Paper by Mr. James Carr (see last week's "JOURNAL" and our issue to-day) the impression were gained that the Stretford Gas Undertaking was inefficient, the impression would not be correct. The point made by the Author was that, however good the results, one must never feel satisfied, but must be continually seeking ways and means of improvement in all branches of gas manufacture, supply, and service; and he stressed how vital it is to pursue with real enthusiasm a gas-cum-coke policy. Nowadays of course we no longer have the choice and selection of coal to produce coke of the quality we should like to produce, and post-war one of our most important immediate problems will be this matter of obtaining coal supplies most suitable for our plants, and capable is yielding coke low in ash and of uniform characteristics. That of the first step. Then comes the organization for preparation and marketing. For the past twenty years the Stretford undertaking has got down to the problem, and during this period it has never been necessary for the Gas Board to make application for a licence to ship coke; all output has been disposed of in its area of supply. The coke business, which Mr. Carr detailed in his Paper, has been built up by service, but he contended that this service can be carried very much further when the war is over, and his comments on the subject are of general application.

And if, on reading the Paper, those outside the Gas Industry gain the impression that there is cause for depression within its ranks, they will be mistaken. Expressions of depression from within there have been, but, quite frankly, we find it difficult to find the cause. Why the Gas Industry should be gloomy, at any rate from the technical point of view, we do not know. Our own feeling is that the Industry, as far as its technical progress and strength are concerned, has nothing whatever to be ashamed about. If realistic thinking has made us critical, it should at the same time have made us proportionately more optimistic. We have learned to see how we can improve our carbonizing results; post-war—and even during the war—it is only a question of the will to implement the findings. We have been told how we can reduce the fuel used in making gas and coke. We must look to closer control of carbonizing conditions, of producer operation, of steam consumption, and so on. To-day we suffer from poor coal and inadequate and in many cases inexperienced labour, but we can take heart in the background of technical knowledge gained in the pre-war years and crystallized during the present conflict. In taking stock, there are fundamentally no grounds for depression. It is good to take stock now; and we like the attitude of Mr. Carr expressed in the concluding paragraph of his Paper: "I have cut and dried quite a number of schemes, and have put them away so that they will be ready as soon as restrictions are removed. I am anxious at all times to plan along with my staff our own internal affairs and policy, rather than look for some imaginary help and guidance from outside. One gets tired of continually hearing the remark that the Government ought to do this and that for the Gas Industry. If we as managers and engineers, salesmen, &c., know our jobs, then we should dictate from within, keeping ever before us that word 'Service.' "

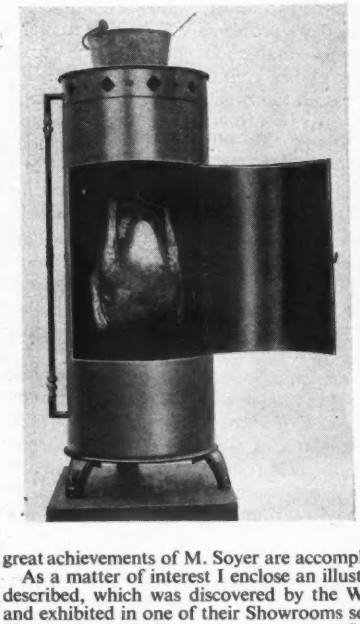
An Appeal for Economy

An urgent appeal for a stricter economy in the use of gas and electricity was made last week by the Minister of Fuel and Power. Particularly in the last two months, said Major Lloyd George, there had been a very serious increase in the consumption of both gas and electricity. One had to consider the availability of plant, and in the case of electricity especially this was a very serious matter. Then, too, there was the question of labour, which was now very difficult to find. One reason why he was anxious about the increased consumption of the two commodities was that there had been a switch-over in certain war industries which would mean a greater drain on the country's fuel resources, and the demand would increase as the months went by. The rise in consumption of gas and electricity in the last few weeks had been very significant, and if we had a severe winter the strain on the two fuels would be tremendous. There was no doubt that many people were saving coal in preparation for a cold winter and were therefore using more gas and electricity. If people would only go in for more coke the result would be beneficial to the country.

Letters to the Editor

Cooking by Neat Gas

DEAR SIR,—With reference to Mr. C. H. Rutter's letter in your issue of Oct. 27, by a singular coincidence the President of the Midland Association of Gas Engineers and Managers—Mr. A. H. Cranmer—told the meeting on Oct. 21 that his grandfather had used gas for cooking some time in the 1860's. I was then able to refer to a pamphlet in our possession published in July, 1847, by the original Thomas Glover, the founder of our associated meter firm. In this the Author, Alex Croll, after discussing meters, &c., remarked: "It should be remembered also that gas may be advantageously employed in the domestic economy, to the purpose of cooking." He then explained that in most cases the gas jets are enclosed in a "circular" sheet-iron case. After dwelling on some of the advantages he went on to state: "It is well known that it is with gas that the great achievements of M. Soyer are accomplished at the Reform Club."



As a matter of interest I enclose an illustration of a cooker such as described, which was discovered by the Wandsworth Gas Company and exhibited in one of their Showrooms some ten years ago.

R. & A. Main, Ltd., Yours faithfully,
48, *Grosvenor Gardens*, ARTHUR FORSHAW.
London, S.W. 1.
Oct. 29, 1943.

Bill Collection

DEAR SIR,—One of the problems confronting those in charge of the finances of public utility undertakings is the tracing of people who leave the area of supply without paying their bills.

So long as consumers remain "on the district," the ultimate payment of charges is generally assured. These accounts can always be regarded as alive; at least they are still in the land of the living, and although, like sick patients, they may need careful handling, generally speaking they can be nursed back to a healthy condition. In the event of measures more drastic than nursing becoming necessary, the consumer is at least under control so long as he wishes to remain a consumer, and unlimited credit such as some unwise shopkeepers give with a view to retaining custom need never be allowed.

When consumers move away, however, the position is vastly different, and the difficulties of collection are multiplied. In many cases the consumers do give notice before they leave, and these can usually be relied upon to pay when their accounts are rendered. There is, however, a certain section of the community which lives by its wits, and to whom the settling of debts is a sign of weakness, and when such people move they give a bogus address or no address at all. It is against this hardcore of trouble that public utility undertakings should combine to take strong action.

It may be said that there is a system already in force under which the *bona fides* of new consumers are scrutinized by most companies of any size, but my experience is that the information supplied is so poor and the whole business is so perfunctory as to be more of a stationery-wasting device than anything else.

As the result of a proposal which I made in 1941, a large group of undertakings in the London area have agreed to operate a scheme for the collection of the accounts of other companies' defaulting consumers who move into their areas of supply. On a small scale this scheme has provided quite a useful way of dealing with defaulters. Even so it is somewhat a hit or miss business, and something more seems to me to be required.

I once assumed optimistically that the Local National Registration Officer would be able to give us particulars of the new addresses to which defaulters have gone, but I was informed that he had no such authority. I think certain local authorities may be more fortunately placed in getting over this fence, but that may be because I have a suspicious mind. The fact is that the Registrar-General confirms that no disclosure of new addresses is permissible for the purpose of tracing bad debtors. This is evidently the law as it stands, and I suggest that the appropriate authority in the Industry might make representations to have it amended.

Lea Bridge District Gas Company, Yours faithfully,
Leyton,
Nov. 10, 1943. NORMAN H. DAVIES,
Secretary.

National Fuel Policy

DEAR SIR,—Mr. Albinson's realistic and pungently expressed letter in your issue of Nov. 3 comes as a breath of fresh air, and will find much support among the more progressive members of our Industry even if that support remains for the moment largely inarticulate.

The arguments against the usual privately owned large-scale monopoly are not those which can be raised against the Gas Industry; but there are very cogent reasons why the latter is in urgent need of control.

Not only is there no evidence and no likelihood that the competing fuel industries will work out and prosecute together a coherent policy in the best interest of the consumer and of the national resources, but no one who uses his eyes and ears can fail to be aware that there are many in responsible positions in the Gas Industry who are all too ready to return to the *status quo*. Such persons crab co-operation at source by their parochialism, prejudices, and jealousy for their personal independence which nothing short of compulsory measures will ever overcome. Furthermore, although we are perhaps less mealy-mouthed about our own affairs than before the war, we have not yet faced the fact that there are numerous works in the country—many by no means small—where the technical standard is deplorable; plant and methods are archaic, and practices are indulged in which make one's blood run cold.

The cure for these things lies in public ownership, which, provided those who understand the job are left to manage, can on balance result in nothing but good. The bogies which are repeatedly hashed up as objections to such measures will not bear impartial and logical examination, and I invite such of your readers as may not already have done so to see what proper control and co-ordination can achieve by referring to the description of the London Passenger Transport Board in the article, "The Gas Industry and the Future—No. 4," in your issue of Sept. 2, 1942.

Yours faithfully,
Nov. 8, 1943. "TECHNICIAN."

DEAR SIR,—It was refreshing to read in Mr. Albinson's letter in your issue of Nov. 3 real evidence of a scientific approach to the question of our national fuel policy, even though one had hoped that its main thesis—that common ownership was absolutely vital to the national interest—was so self-evident as to need no reiteration.

The plain fact is that in coal we are dealing with a wasting asset, and our duty to posterity no less than our own good demands its utilization in the most economical and scientifically sound manner, independent of the often contradictory urges of sectional balance-sheets. We have willy-nilly to accept control. The question is, are we to have it subjected to the back-drag of financial motives, more and more discredited as time goes by, or are we to harness it to a system of common ownership that will not only enable the fuel industries *in toto* to take unfettered advantage of scientific management, but also imbue their personnel with the ideal of service to the community, and the nation with the realization that its own wealth is being used with a due sense of trusteeship?

Yours faithfully,
Nov. 8, 1943. "SERVICE FIRST."

Letters to the Editor continued.

British Gas Association

DEAR SIR,—The drafting of the Constitution and inauguration of the British Gas Association must be presumed to present a formidable task, especially if, as indicated in the Report on the Planning of the Gas Industry, endeavour is being made to reconcile the apparently irreconcilable—that is, to create in one organization a democratic body representing each and every gas undertaking and a federal body representing the many National Gas Organizations.

Since the Association was conceived in 1938 primarily to merge the National Gas Council and the British Commercial Gas Association, would it not be possible at once to inaugurate the new body within such limits, by the immediate adoption of the simplest form of Constitution, leaving the Central Council to work out a more comprehensive organization for approval during the succeeding months?

As you pointed out in your issue of Nov. 3, the matter is of the utmost urgency and gravity since, in the absence of the Association, the reconstruction visualized by the Report cannot effectively proceed, while the Industry will be awkwardly placed in dealing with the situation which would arise if, at any moment now, a Government Committee is appointed to review the Gas Industry in general and its Planning Report in particular.

It should be realized that, in terms of time, the two courses of procedure represent a difference between weeks and months.

Yours faithfully,

Nov. 13, 1943. "BLUEPRINT."

National Gas Council

A Meeting of the Central Executive Board of the National Gas Council was held on Nov. 9, at Gas Industry House. The Chair was taken by Mr. Frank H. Jones (Vice-Chairman).

A report on the general coal position was received.

Dr. E. V. Evans, Chairman of the Gas Advisory Committee, made a report to the Board on the various questions discussed at the last meeting of the Committee. He referred, *inter alia*, to the questions of calorific value, penalties for false returns, the cooker and meter position, and combustible elements in road-making material.

It was reported that the negotiations which had been proceeding for some time between the Conjoint Conference of Public Utility Associations and the Railway Companies for a demurrage standage scheme similar to that which has been operating during the past year in the case of the iron and steel industry had now resulted in such a scheme being finally agreed and approved by the Minister of War Transport, to operate as from Nov. 1. The scheme will be applicable to all public utilities having private sidings, but is purely optional in character. Any undertaking desiring so to do may remain under the system already laid down in the Demurrage Order.

Members had been advised of the resignation of Sir David Milne-Watson from the Chairmanship of the Council of the British Gas Federation, as from Jan. 1, 1944, which was accepted with regret. Mr. A. E. Sylvester was nominated in his stead, the remaining members being reappointed—viz., Messrs. J. R. Bradshaw, F. H. Jones, C. S. Shapley, and A. W. Smith.

The present representatives were reappointed to serve on the Council of the Conjoint Conference of Public Utility Associations on behalf of the National Gas Council, as from January, 1944, viz.: Messrs. J. H. Cadman, R. Halkett, J. Jamieson, A. W. Smith, Col. H. C. Smith, D.L., J.P., and Mr. A. E. Sylvester.

The Board approved the recommendation which it was reported that the Coke Oven Gas Sub-Committee of the Post-War Planning Committee proposed to make—viz., that the Sub-Committee in question be merged in the National Gas Council Standing Committee which had been formed to deal with this subject. It was stated that all the members of the Sub-Committee were members of the Standing Committee.

The next meeting of the Board will take place on Dec. 14.

Scottish Juniors

A Meeting of the Scottish Junior Gas Association (Eastern District) was held in the Heriot-Watt College, Edinburgh, on Nov. 6. Mr. T. B. Livingstone presided and welcomed some 33 members and friends. The minutes of the previous meeting were read and approved on the motion of Mr. Sawers, seconded by Mr. Denoon. Mr. Livingstone introduced Mr. H. R. Hems, Superintendent of the Industrial Heating Section, Industrial Research Laboratories, Gas Department, Birmingham. Mr. Hems spoke on the various types of industrial heating boilers and illustrated his talk with lantern-slides. Several of the members present took part in the discussion which followed, and Mr. Hems replied to the points raised.

Star Lighting

On Sunday last Mr. Herbert Morrison, Home Secretary and Minister of Home Security, said it would probably be announced shortly that there is to be a certain extension of star lighting in special areas where up to now it has not been allowed.

Gas Consolidation, Ltd., has declared an interim dividend on the "A" Ordinary Stock of 2½% actual, less tax, and an interim dividend on the "B" Ordinary Stock of 2% actual, less tax, for the year ending May 31, 1944, payable Dec. 1, 1943 (same).

The Lincoln City Council, upon the recommendation of the Gas Committee, resolved to authorize a rebate of 15% to all consumers in respect of the amount paid by them for gas consumed during the year ending Dec. 31, 1943.

The Ministry of Fuel and Power has issued the first of a series of *Industrial Bulletins* on economic measures to be observed in the use of lubricating and industrial oils, giving general advice on how substantial economies, without any diminution in lubricating or mechanical efficiency, can be achieved. The economy plan is given under the three main headings of receiving and storing, issue and application, and reconditioning and recovery. Users who have not already done so are urged to make one member of their staffs responsible, with the backing of goodwill and co-operation by all concerned, for reducing still further the oil consumption of their plants. In cases of doubt about the possibility of reconditioning of oil or about its condition after treatment, users are advised to submit samples to their suppliers for laboratory examination and report. Oil which cannot be satisfactorily treated to fit it for any further lubrication duties within the works must not be wasted. The Lubricating Oil Pool, Brettenham House, Lancaster Place, London, W.C. 2, must be informed, and arrangements will be made for its collection.

The Enormous Increase in the number of canteens during the war has emphasized the need for information on catering accounts. This need has been met by the publication jointly by the Industrial Welfare Society, 14, Hobart Place, London, S.W. 1, and the Empire Tea Bureau, 89, Kingsway, London, W.C. 2, of *Canteen Accounts* (22 pages, 1s. post free from either of the addresses given). The two organizations found that they were both working on the same lines, and it was mutually decided that co-operation would avoid overlapping and achieve the best result. The book is designed as a brief guide to those concerned with ordering, stores control, and accounting, for canteens of all sizes, but particularly for the smaller ones. While the suggested record forms for stores, ordering, and control, and the notes on the cash, purchases, and wages books required may need adaptation to fit in with existing systems, there will ultimately be great advantages in having records of canteen accounts that can be compared. The wide differences in the meaning of the word "profit" when applied to canteen catering often lead to confusion, and the book should establish some grounds for comparisons of costs, and give canteen managers and accountants a picture of the sequence of accounts from purchasing goods to the final balance-sheet.

Valuable Direction for the most economic use of fuel in factories is given by specialists with first-hand practical experience in the 1943 edition of the *Fuel Economy Review* (published by the Federation of British Industries, 21, Tothill Street, London, S.W. 1; 64 pages, 2s. 6d.). It is the 22nd volume of the series and covers all forms of fuel utilization. Mr. W. F. Howell, of the Industrial Gas Development Centre, Manchester, deals with "Town Gas and the War Effort," and concludes an interesting survey of the part the Industry has played in the prosecution of the war on this optimistic note: "The reception given to gas generally by manufacturers at the present time makes us have no fear for the future of our Industry, and we are looking forward towards the end of the war with the confident expectation that the demand for gas for peace-time processes will be no less than the present war consumption, and can then be increased." Mr. H. D. Greenwood reviews the year's technical developments in the Gas and allied Industries; Mr. W. Stanley Crosier, of Sarco Thermostats, Ltd., describes how modern methods of thermostatic control save fuel and improve efficiency in industry; and Mr. P. Pilkington discusses instruments as a guide to economical steam generation. Other articles cover the utilization of wood waste as fuel; directions for improving boiler plant efficiency, a combined power and process steam installation; fuel economizer operation and maintenance; and fuel economy and preservation of stored machinery in closed works.

The Kingston Branch of the Nursery School Association, under the direction of Dr. J. W. Starkey, Medical Officer of Health, held an interesting Exhibition recently at Bentall's Store, at which all forms of children's welfare were shown. Addresses on various aspects of the question were given by experts, and films were shown of nursery life. Attractive children's meals were demonstrated by the Ministry of Food staff in collaboration with the Wandsworth and District Gas Company, and a "Regulo" "New World" cooker was used.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

TEN POST-WAR THOUGHTS*

By JAMES CARR, M.B.E.,

Engineer, General Manager, and Clerk, Stratford and District Gas Board

(*Continued from p. 592*)

5. *Was I entirely satisfied with the carbonizing results in view of the fact that coal, even in* 1939, *was being directed, and the selection and quality were not what they were prior to the introduction of the Coal Selling Scheme?*

Of course one never could be satisfied. It is hoped that after the war we shall again be allowed to purchase the type of coal most suitable for our plants, and to have some redress when we complain of poor quality. The investigation committees operating under the Coal Mines Scheme prior to the outbreak of war could, I am sure, render much better service to all users of coal if they paid more attention to the question of quality. Anyone who has sat before one of these investigation committees rather gets the impression that at all costs their chief object was to support and uphold the Coal Selling Scheme introduced by the Mines Department in 1935, and maintain the price regardless of quality. Obviously as an industry we want to be able to buy coals most suited to our particular type of plant, and to have the coal delivered with more or less uniform ash and moisture content throughout the period of the contract.

The question of sulphur removal will, of course, have to be investigated by every works if we are to sell flueless appliances. There has been a great deal written and said about this problem from the carbonizing side. We are at Stretford at the present time conducting some serious experiments into the question of complete sulphur removal. One should never tire also of investigating the operation and control of producers. Any checks and methods which can be introduced to reduce the fuel consumption figure are well worth while.

Under war conditions the fuel efficiency figure on retort house producers has been seriously affected by the present mentality of the stokers to their duties. At Stretford we are experiencing the greatest possible difficulty in finding stokers who are capable and willing to carry out normal peacetime practice of operation.

The present slack wartime methods of retort house operations cannot for one moment be tolerated in normal times if we are to hold our own in the domestic and industrial field.

6. *Was there adequate and sufficient scientific control of the carbonizing plants?*

I should like to see, after the war, better facilities in all our collecting mains for quickly taking samples of the crude gas, also better facilities for taking waste gas samples, and it should become more or less a weekly routine to keep sampling the gases leaving the retorts and also the waste gases leaving settings. Too much time is wasted by the laboratory staff in having to fix up their own arrangements for taking samples at various points on the settings and collecting mains.

Very few collecting mains are originally installed with points selected on them where suitable offtake pipes are left for laboratory use. These are nearly all installed as an afterthought, and have to be put in when the plant is working. The same remarks apply to taking waste gas samples from the settings.

I contend that the laboratory day book is just as important as the carbonizing book. In fact, in many cases it is more important, because if the tests and reports presented daily are acted upon and the necessary adjustments made, economies can be effected at once which have a very important financial bearing on the results of the undertaking.

The laboratory day book, to be of real value to the undertaking, should, I suggest, contain the following information:

a. Combustion chamber temperature of each of the settings.
b. Waste heat boiler inlet and outlet temperature.
c. CO_2 recorder at the inlet to waste heat boilers.
d. In the case of undertakings with Congdon pipes, Congdon seal pot temperature.
e. Town gas C.V., coal gas C.V., mixed gas C.V.
f. Complete gas analysis for the day.
g. Amount of gum, grains per million cu.ft.
h. Sulphur, grains per 100 cu.ft.
i. Detarrer temperatures.
j. Tar sales, and if sold crude, water percentage.
k. Concentrated ammoniacal liquor sales.
l. Works stocks of all storage wells, tar and liquor.
m. Purifier order and changes made.
n. Oxygen content at inlet to purifiers.
o. NH_3 at inlet and outlet.
p. Pressures thrown by purifiers.
q. Dri-gas inlet and outlet temperatures.
r. Dew point, &c.
s. Gas temperature at station meter.
t. All details of benzole plant operation including sales and distillation test figures, gallons per ton of coal carbonized.

* Paper to the Manchester District Association of Gas Engineers and Managers, Oct. 29.

7. *Were residual and by-product plants operating to give best working results?*

The answer to this question is definitely no. Our purifiers were under capacity, and we were not working up the oxide to somewhere in the neighbourhood of 50% sulphur. This has been rectified during the war and additional purifiers have had to be installed.

With regard to the benzole plant, prior to the war an order was placed for a vacuum distillation plant with static washers to handle up to 11 million cu.ft. per diem. Unfortunately owing to the outbreak of war there was practically fifteen months' delay in getting this plant installed. The Board is, at the present time, extracting over 3 gallons per ton of coal carbonized.

There are further improvements which could be made, especially with regard to the elimination of sulphur by increased washing, and the addition of other plant with which we are now experimenting.

The Board's concentrated ammonia plant was also very much under capacity, and it was decided, shortly after the war broke out, to increase the capacity of this plant, and we are now handling all the weak ammoniacal liquor on the works and are selling 22% concentrated liquor.

It was found necessary to increase the capacity of our dri-gas plant, and in this connexion old benzole rotary washers were brought into use for increasing our washing area.

Reorganization of our tar loading arrangements has been carried out and reduction in the water content of our crude tar is very considerable. I am, however, not entirely satisfied with our present arrangements, and hope to be able to carry out extensive reorganization of the main tar and liquor wells which will made provision for greater separation of the tar and liquor.

8. *Was the method we had adopted for screening, grading, and marketing all our coke satisfactory? Did the method in being fully cover the domestic requirements in the area of supply?*

Both works are equipped with modern coke hoppers and screening plant. I am not, however, satisfied with the screening plant on both works, and when we have more opportunity in peacetime to experiment with different types of screens, and are able to obtain raw material for this work, I intend to proceed further with this investigation, and eventually to install a more efficient screening plant than we have now got.

While we are actually producing large coke, broken coke, domestic coke, smithy nuts, &c., the wear and tear on the existing plant is very heavy, but it is difficult to make much alteration or improvement to the coke handling and grading plants owing to the restriction on materials and the shortage of labour, but it is something which wants early attention in peacetime.

We have a fairly accurate detail of our coke sales month by month, and I give, on the accompanying schedule A, a typical analysis of the coke sold during one of our winter months.

In addition to the attached the domestic coke sales are further divided into districts as shown on the accompanying schedule (marked B). This information certainly is useful, but in normal times much more use will have to be made of it if we are to extend our present coke sales in the domestic field. I intend to put into operation a very much closer liaison between our domestic gas sales department and our coke sales. Not enough liaison between these two departments existed, and our salesmen did not press hard enough when they found that gas was not required, but it was the intention of the housewife to retain a solid fuel fire. Many more coke-burning fires can be installed with better representation on behalf of our salesmen, coupled, of course, with a continual demonstration of coke-burning appliances in our showrooms.

I appreciate that all these efforts will be wasted unless our coke is readily ignitable, low in ash and moisture content, uniform in size and free from dust. These are the real secrets of building up a steady market for domestic coke, coupled with a good delivery service.

It has been the practice at Stretford for the last 19 years to make one of the senior members of our staff responsible for all coke sales, and the official so appointed has received part of his remuneration on a commission basis. The result of making one member of the staff entirely responsible for the coke department has been well worth while; this is shown by the fact that it has never been necessary for the Gas Board to make application for a licence to ship coke during the whole of this period, as we have always been able to dispose of the whole of our coke within our area of supply. This coke business has been built up entirely by service, which I contend can be carried very much further when the war is over.

In the first complete year's working of the Gas Board in 1923 the coke sales amounted to 22,601 tons; for the year ended March 31, 1943, the coke sales amounted to 87,186 tons.

(A) Stretford and District Gas Board. Analysis of Coke and Breeze Sold, December, 1942.

	T.	C.	Q.
Coke sold	7,455	19	1
Breeze sold	913	8	1
Total	8,369	7	2

Grade analysis.

	T.	C.	Q.
No. 1—Big Coke ...	1,436	1	3
No. 2—Broken Coke ...	3,493	13	0
No. 3—Domestic Coke ...	2,084	18	1
No. 4—Smithy Coke ...	441	6	1
	7,455	19	1
No. 5—Breeze	913	8	1
	8,369	7	2

General analysis.

	Loose loads. T.	C.	Q.	Bags.	Weight. T.	C.	Q.	Total. T.	C.	Q.
Coke Collected by Customers *ex* Works ...	75	0	1	—	—			75	0	1
,, ,, Factors and Merchants *ex* Works	1,692	14	0	14,574	594	17	3	2,287	11	3
,, Delivered by our Vehicles—Direct ...	2,879	3	1	6,539	247	4	2	3,126	7	3
,, ,, ,, For Factors	464	0	2	4,322	165	0	0	629	0	2
Household Domestic	—			12,989	492	0	3	492	0	3
,, Rail Wagons—Direct...	75	19	1	—	—			75	19	1
,, ,, ,, For Factors	769	19	0	—	—			769	19	0
Totals—Coke	5,956	16	1	38,424	1,499	3	0	7,455	19	1
Breeze Collected by Factors and Merchants *ex* Works	251	17	2*	—	—			251	17	2
,, Delivered by our Vehicles Direct ...	440	11	0	9	8	3		440	19	3
,, Rail Wagons—Direct	82	5	0	—	—			82	5	0
,, ,, ,, For Factors	138	6	0	—	—			138	6	0
Totals—Breeze	912	19	2	9	8	3		913	8	1
Totals—Coke and breeze ...	6,869	15	3	38,433	1,499	11	3	8,369	7	2

* Includes 193 tons 13 cwt. 3 qr. Le Fleuve Breeze sold *ex* Works.

(B) Stretford and District Gas Board. Coke only Sold, December, 1942. District Analysis.

Purpose used for.	Sale. T.	C.	Q.	Stretford, including all Trafford Park. T.	C.	Q.	Urmston. T.	C.	Q.
Coke—Household and Non-Industrial—Direct Deliveries	140	1	0	300	4	1	343	9	2
Coke— ,, ,, Delivered for Factors ...	27	3	1	383	13	9	12	1	3
,, Industrial—Direct Deliveries	76	1	2	2,776	17	3	57	13	3
,, ,, Delivered for Factors	35	18	0	934	9	3	5	13	3
	279	3	3	4,395	4	3	418	18	3

This Analysis excludes Coke sold *ex* Works, but includes Rail Deliveries.

9. *Were the staff arrangements of the undertaking, both technical and clerical, satisfactory? Were the staff sufficiently interchangeable? Had the staff in general a knowledge of the selling and manufacturing programme of the undertaking, and were they all pulling their weight and doing their job* 100%?

The technical staff employed by the Board have always been reasonably young. The technical training instituted for the juniors was on a five-year basis, enabling youths who come to the Undertaking with a school certificate or other qualification to go into every department of the undertaking. During their five years' apprenticeship they attend night schools, for which the Board pay their expenses providing the necessary attendances are put in. At the end of the five years, if they are successful with their examinations, they are absorbed on the technical staff as junior technical assistants, or if there are no vacancies with the Board, every assistance is given to them to find a similar appointment with another undertaking.

Briefly the technical apprenticeship with the Gas Board covers a certain number of months in the following departments: Drawing Office, Laboratory, Fuel Laboratory, Industrial Gas Department, Showrooms, Distribution Mains and Services, Retort House, and Engineering Fitters' Shop. It would be an added advantage to let the technical assistants have some time in the general offices effecting management, rentals, accounts, costing, &c. In fact, this is vital to complete their education and course.

With regard to the clerical staff, we would not claim that it was really interchangeable, but some progress had been made prior to the war by moving clerks round from rentals to costing, from costing to accounts, and *vice versa*, and this tends to give the clerical staff a better vision of the operation and working of the undertaking, and it is something which I am anxious to push much further.

I contend that if we are to get the full co-operation of our clerical staff, the management should attempt to make provision and the opportunity for the clerical staff to move round from department to department, and get an all-round picture of the working and management of a gas undertaking.

Staff talks, technical and clerical, are essential. Under war conditions it is difficult to keep these up because so many of our purchases and activities are controlled by the Government at the present time in one way or another, but, on the return of competitive trading, frequent staff talks will be vital.

I am very anxious that this undertaking shall not have technical staff or clerical staff with what is known as the "municipal mentality." We all know that eventually this outlook on life breeds the "take it or leave it" attitude, and if we are to hold our own in the post-war world it is essential that the whole of our staffs should be keen, alert, and 100% interested in their jobs, and this can only be achieved by a certain amount of variety being introduced into their work. Talks by the senior members of the staff telling the technical and clerical staff exactly what is taking place in the conduct of the undertaking is essential—in other words, taking the whole of the general staff into one's confidence.

10. *Last, but by no means least, was I satisfied with the amenities for the labour employed, and were they operating and working under the best possible conditions? Were good results coming from the activities of the Social Club?*

From the manufacturing point of view it will be one of my first jobs on the return to peace conditions to reduce the time during which stokers are exposed to the heat by altering the present system of discharging the coke in the old retort house. This will greatly improve the working conditions and reduce time exposed to the heat to a minimum.

I am anxious to build a new canteen in a central position on the works. At the present time a portion of the Board's new offices has been taken over for this purpose, and if left in this position would hinder office development when the war is over. I think the operation of a canteen for our workpeople has come to stay, and has proved very beneficial.

With regard to the general distribution staff, particularly fitters' boys, better facilities will need instituting for taking classes run by our own distribution staff for plumbing and gasfitting. A certain amount of time will have to be taken off from the ordinary working hours so that young apprentices can have a thorough grounding, and suitable provision should be made to allow these juniors to attend the local night schools.

In April, 1935, a Social Club was formed and the Board purchased a house which was converted into a club house with the usual amenities. This particular house was in close proximity to some land which the Board had in the Borough of Sale, and a hard tennis court and bowling green were laid out in addition to work being done on the cricket and football field.

The whole of the activities of the Social Club have been run by the employees themselves, and in the early days it was necessary for the Board partly to finance the activities of the Club. In later years this has not been necessary, and it is now entirely self-supporting.

A healthy proportion of the staff and workpeople support the Club. During the war they have established their own Comforts Fund for employees who are away in the Services, and have sent out parcels regularly to employees who are unfortunately prisoners of war. I contend that the activities of this Club have been a very valuable contribution to an all-round good understanding. With the return of normal times it is hoped to intensify the activities of the Social Club, which, without a doubt, has been a beneficial factor in the operation and running of the undertaking.

I must, Mr. President, apologize because I really feel that the Ten Post-war Thoughts have, perhaps, been present in all our members' minds, and I have gone over ground which they, no doubt, have dealt with very much more thoroughly than I have. I also realize that there are very many more thoughts and ideas which must be brought into operation when the war is over if each of our individual undertakings is to progress.

My sole object, however, in, shall I say, thinking aloud was to remind, if that is necessary, my colleagues that it is essential to make

preparations and plans for each of our own individual undertakings now rather than when the war is over. I have cut and dried quite a number of schemes, and have put them away so that they will be ready as soon as restrictions are removed. I am anxious at all times to plan along with my staff our own internal affairs and policy, rather than look for some imaginary help and guidance from outside. One gets tired of continually hearing the remark that the Government ought to do this and that for the Gas Industry. If we as managers and engineers, salesmen, &c., know our jobs, then we should dictate from within, keeping ever before us that word "Service."

TASKS OF THE JUNIOR

In the course of his Presidential Address to the London and Southern District Junior Gas Association on Oct. 21, Mr. **B. W. Dawkins** said:

It is the lot of most juniors to deal with a mass of detail which tends to obscure the broader issues eventually involved in their work, and I have therefore attempted to deal with some wider aspects rather than confine myself to a description of a plant or process. At one time I hoped to avoid any mention of nationalization, integration, or planning, because of the highly controversial nature of proposals that have so far been put forward, and because it is difficult to see at first where the junior comes into problems of higher policy which are still under discussion.

Whatever the shape of things to come for the Gas Industry, it will be the juniors who will have the day-to-day application of schemes of development immediately it becomes possible to bring them into operation. Therefore the junior is vitally interested in any plans put forward, and a knowledge of the need for change and the methods proposed to bring that change about will enable him to appreciate his own part in bringing the whole to a successful conclusion.

The complete survey of the Industry made by P.E.P. and published in March, 1939, still forms a valuable starting-point for any consideration of future possibilities. It was clearly realized by the compilers of this report that some national plan was essential to the development of the Industry.

I am not ignoring the calls which have been made on the Gas Industry by four years of war, but the accelerated pace of development in all industries coupled to war production should serve to increase the rate of national co-ordination; not to reduce it to a tentative post-war proposition.

A more compact form of internal organization should strengthen the Industry as a whole, particularly where negotiations with Government Departments are concerned, or where direct competition with other fuels has to be met. At present the activities of established national bodies are co-ordinated in the British Gas Federation, and the technical interests are represented through The Institution of Gas Engineers.

The geographical limits of the Junior Associations do not precisely conform to those of the District Associations or to the areas under the Advisory Boards, but there is no reason why geographical boundaries should not be the same for all subdivisions of the Industry. This is one matter which could be tackled immediately. Serious endeavours are being made to improve the effectiveness of the Joint Junior Council, and to ensure that all Junior Associations have adequate representation. From this point it is intended to establish channels whereby members may have a voice in those affairs of the Industry which affect their work and interests.

A subject which requires more intensive study as one of the foundations of future development is the practical training of works technical staff of all grades. In order to recruit the best brains and ability for any course of specialized training, the inducement will have to be more comparable with other professions that demand high qualifications. A student should be able to look forward to an appointment that will at least make him self-supporting, otherwise he will develop an inferiority complex in regard to his work as well as to his personality that will ultimately damage the prestige of the Industry.

On the strictly manual side of works operations it is to be hoped that plant developments will be sufficiently rapid to enable a marked improvement in conditions of labour to be shown in the next few years. The introduction of mechanical apparatus for operations which, under certain conditions, are particularly arduous for the men directly concerned will call for a greater degree of mental ability. At the same time the operators will be able to take more interest in the process and more pride in the plant, and so increase the standard of efficiency.

This brings me to the second subject which is very well worth attention, and which is likely to be the responsibility of junior members of the staff. The state of a works as far as appearance, tidiness, and systematic operation is concerned is bound to affect the general tone of the workers, and improvement in one invariably leads to improvement of the other. The showroom at the top of the town may succeed in advertising Public Servant No. 1, but the works at the bottom of the town is too frequently Public Nuisance No. 1.

Another matter which can profitably be studied by everyone connected with gas-making plant is the possibility of much greater standardization of units of plant. We anticipate a sudden increase in demand for gas with the return to normal conditions and the resumption of building development, and it would be a great advantage in the extension of works and replacement of wrecked or out-of-date plant if certain features were sufficiently standardized to allow of straightforward multiplication, according to the size of works. The contractors and designers would then be able to concentrate on the most efficient unit, and bring mass production methods into the making of it.

For example, so long as it is necessary to use solid purifying material, it is going to be necessary to use purifier boxes very similar to those with which we are familiar. Now a standard set of purifiers could be designed to have a capacity of, say, one million cubic feet per day, and all connexions, grids, covers, and auxiliaries would be standard. A small modification in the main structure would enable all the same parts to be used for a set of double the capacity. Similarly, by adding units of one or two million at a time a large works could be furnished from this basic unit. The same principles could be applied even to carbonizing plant, but there the basic unit would be influenced by the allocation of the operators required to man it and by the anticipated working life of the plant. Any compound arrangement of retort settings should be sufficiently subdivided to allow a unit to be reset while the rest is maintained in full operation. It is generally considered that one-third of plant must be shut down for seasonal variations so that this would appear to be a suitable basis for subdivision.

The main features of the plant should have a maximum life of 20 years, as it is anticipated that sufficient progress in theory and practice will have been made in that time to justify a completely new design. This time limit should contribute to more active progress by reducing the delay in development due to large and very substantial structures closely confining the extent to which plant modifications can be introduced.

Diary

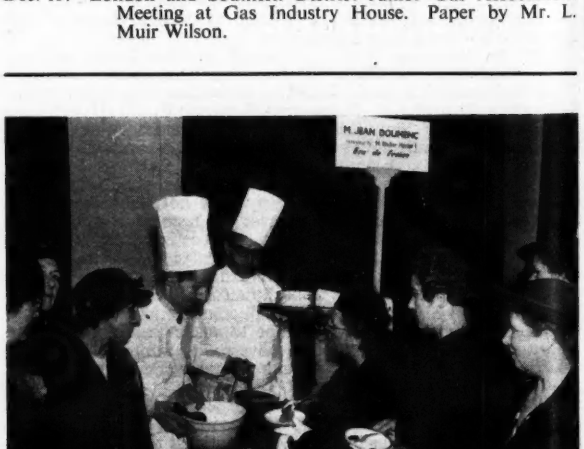
Nov. 23.—Southern Association of Gas Engineers and Managers: General Committee, Gas Industry House, 11.30 a.m.

Nov. 26.—Southern Association of Gas Engineers and Managers (Eastern District): Committee, Gas Industry House, 11.30 a.m.

Nov. 26.—Southern Association of Gas Engineers and Managers (Eastern Section), Paper by Dr. Weston and Dr. Haffner, entitled "New Evidence in regard to the Mechanism of Carbonization in Continuous Vertical Retorts," Gas Industry House.

Dec. 11.—Scottish Junior Gas Association (Eastern District): Meeting with Western District, Glasgow. Address by Colonel C. M. Croft.

Dec. 15.—London and Southern District Junior Gas Association: Meeting at Gas Industry House. Paper by Mr. L. Muir Wilson.



(*Photograph by courtesy of Ministry of Food.*

Three leading chefs—from L'Ecu de France, the Dorchester Hotel, and the Danish Club—demonstrated the cooking of dried egg dishes at the Ministry of Food headquarters in London. Three Regulo New World gas cookers were used.

FUEL ECONOMY IN GAS-WORKS

By G. M. GILL

THE Author has received many letters respecting the ten Articles of this series, in some cases to poin' out errors, and in others to suggest alterations or additions to the points discussed in the articles. It appeared desirable, therefore, to treat these in much the same way as the Author of a Paper in dealing with questions and criticisms.

Thermal Efficiency (No. 1, "JOURNAL," Jan. 27, 1943).

In calculating the thermal efficiency at works the Author made a mistake in including the therms received in the form of gas purchased. Therms in this form should be excluded on both sides of the balance-sheet, as reflection will show that if a works were to purchase 90% of its total output and make 10% at a low thermal efficiency of, say, 50%, the works thermal efficiency would amount to 95%, which is absurd. Accordingly, as stated above, the therms received in the form of gas purchased must be entirely excluded in making these calculations, and, after all, receipts of gas in bulk play no part in the efficiency of operation of the works receiving the gas.

Two correspondents pointed out that it would be better to use the words "made for sale" in the case of the residuals, coke, tar, or benzole, as this term in itself suggests that the sales quantities of these by-products during the period must be corrected for stocks at the beginning and end of such period. The Author had stated that the calculations should be based upon the "sold" figures of these by-products, and that their quantities should be corrected for stock at the beginning and end of the period. He accepts the suggestions of his correspondents as being a better way of setting out instructions for calculating thermal efficiency.

It was also suggested that to calculate these figures monthly as proposed by the Author was too short a period, as stock-taking would be too great an influence on the accuracy of the figures, which might as a consequence be expected to fluctuate unduly.

In the Group all Companies return their thermal efficiency in the monthly results, and while there are fluctuations from month to month, it appears likely that these will get less as monthly stocktakings become regular routine. Accordingly, the Author considers that it is advisable to adopt a monthly period of making these calculations.

The Author was asked whether oil used for benzole extraction should be included in the calculations. His reply to that query is that it should be included if the oil be finally used for gas-making as, for instance, in water gas plant; but if it is sold, that it should be excluded from both sides of the account. After all, if an activated carbon plant were in use, it would not be correct to add and deduct the therms in the carbon material supplied for this purpose, and if oil be used for benzole extraction, it should be classed in the same category.

One correspondent wrote and enquired whether the purchase of low-grade coal screenings for steam raising should be included with the coal purchased for gas-making and, if so, whether it should be calculated on the same thermal basis. The answer to that query was that it should certainly be included, as such coal consists of therms brought into the works, but it was recommended that it should in the case in question be calculated as having 10–11,000 B.Th.U. per lb. as compared to 13,400 in the case of gas coal.

Cleaning of Producers (No. 2, "JOURNAL," Feb. 3, 1943).

One contributor refers to the Author's statement of opinion that producers should be cleaned "often enough but not too often," and expressed the view that maximum and minimum periods should be named. It is difficult to specify actual periods without knowing all the conditions. If the producer be proportionately large and deep, with a good grate area, and the coke in use be low in ash and reasonably free from breeze, then it is probable that the producer will function satisfactorily over a long period of 24 or even 48 hours. This is exceptional, and it would be a mistake to think that producers should be left without clinkering or pricking up for such long periods under normal conditions.

It is a much better plan, in the Author's opinion, for an 8-hourly programme to be arranged, so that each producer receives all the cleaning it needs every 8 hours. A good fireman will, in a matter of minutes, find out whether it needs a thorough cleaning or little more than an inspection. The Author considers that it is wrong and wasteful to pull the fire to pieces as a matter of routine, when the only effect it has is to pull out a large quantity of good coke and a few pieces of clinker.

This is the reason the Author advised that producers should be cleaned "often enough, but not too often," as in his view it must be left to the management to train the firemen to do the work efficiently but not wastefully.

Operation of Producers (No. 2, "JOURNAL," Feb. 3, 1943).

It was suggested that the Author did not deal fully enough with the operation of producers in horizontal retort houses. He proposes, therefore, to deal rather more fully with the operation of producers in the smaller horizontal retort houses. It is suggested that the rules for carrying out this work should be as follows:

1. A proper rota for filling producers with hot coke should be prepared and posted in the retort house.
2. Regular times should be arranged for "pricking up" or clinkering the fires.
3. The clinkering periods with intermittent pricking up should be such as is calculated to produce the necessary heat in the setting to carbonize satisfactorily the coal to be carbonized. In other words, there is no object in carrying higher heats than are necessary to do the required work.
4. The programme of discharging the retorts should be such that there is always hot coke available for filling the producers at the correct times.
5. Producers should be kept at all times reasonably full to ensure a good quality of producer gas. It is, indeed, also suggested that a considerable amount of dusty particles passes into the setting to cause abrasion of the refractory material during times when producers are too empty.
6. No producer should be allowed to go longer than four hours without being charged with fuel.
7. No producer should be clinkered with a low fuel bed, as the clinkering operation will in that case more or less empty it. It is always important to fill the producer soon after it has been clinkered.
8. It is important that after filling the producer the neck ring of the charging door should be freed from all coke and dust, so that the charging door or cover can rest firmly on its seating to prevent air from entering and producer gas from escaping through a bad joint at this point. This fault speedily destroys both charging door and frame, and greatly upsets the work of the producer.
9. The filling of producers in small works should be divided over the shift, as it is much easier for the man or men to fill one producer each draw than to fill all the producers in the same draw, for it is an operation which needs a good deal of effort on the part of the stoker. If a number of producers are being charged in one draw, then the retorts are open too long, with the result that the quality of the gas is likely to be affected.
10. It is most important to keep strictly to the programme of work and not to allow the men to do as they like.

Loss of Gas through Holes and Cracks in Retorts (No. 3, "JOURNAL," Feb. 10, 1943).

One helpful contributor referred to the comments made by the Author in Article No. 3, under the heading "Loss of Gas from Retorts through holes or cracks from mouthpiece joints and lids." He stated that at his works he had successfully tackled leaks in the mouthpiece joints—*i.e.*, the joint between the mouthpiece flange and retort—by preparing a thick mixture of good quality fire cement and applying this while the retorts were hot to the bad places with an ordinary tar brush until these were completely filled, and then by using the same method as part of the ordinary routine every month. He stated that a tar brush was a very convenient tool for the purpose and lasted a considerable time.

Importance of Lighting up Horizontal Retort Doors (No. 3, "JOURNAL," Feb. 10, 1943).

Two managers pointed out that the Author had overlooked the importance of lighting up horizontal retorts before opening doors. This is, of course, very important. They both stated that it was difficult to get stokers to light up doors, as the result of which the joints between mouthpiece and retort, and also the bottom joint of the ascension pipes, were likely to suffer seriously. This is to some extent a question of supplying the stokers with suitable means of opening the doors and lighting the gas. This is a matter which needs a good deal of attention and persistence on the part of the management. In one works where this fault was very prevalent both the police and air raid wardens complained of the "explosions," as they called them, which were taking place in the gas-works at night, and which led nervous people to believe that bombs were being dropped in the neighbourhood.

Suitable tools should be provided for the purpose, and it is suggested that the following means will be found fairly satisfactory: That is, to use a piece of 1½ in. steel tube about 2 ft. long, to the top of which is welded a small piece of ¼ in. tube 6 in. long, which is used for holding a piece of yarn for lighting the gas as the door is opened.

The tube is used both to open and close the lever of the retort door, and when not in use is placed in a bucket in which some waste oil is kept for the purpose of maintaining the yarn in an oily state.

Cleaning Retort Mouthpieces and Lids (No. 3, "JOURNAL," Feb. 10, 1943).

One contributor pointed out that the Author had omitted to state that after the retort door has been opened, the faces of the mouthpiece

and lid should always be scraped every time without exception as part of the routine. This, indeed, should always form part of the regular routine, and will if the management is efficient and insistent, as should be the case. Incidentally, he stated that the scraper should be made of iron or mild steel, and not of cast or spring steel, as these metals soon cut a groove on the face of the mouthpiece and lid.

One correspondent stated that the Author had not paid sufficient attention to overpulling. He was not aware that he had in any way avoided this question, which is, of course, of paramount importance, and he therefore proposes to deal with this matter more fully.

Overpulling (No. 3, "JOURNAL," Feb. 10, 1943).

What is meant by overpulling? Clearly it is to use the exhauster to put a vacuum, however slight this may be, on the retorts. This has the effect of sucking into the retorts—

(1) The waste gases on the outside of the retorts.

(2) Some amount of producer gas and partially burnt producer gas which is formed on the combustion chamber side of the retorts for certainly three or more tiers of retorts.

(3) Air mainly through mouthpiece flange joints—*i.e.*, joint between retort and mouthpiece, mouthpiece lid joints, and mouthpiece ascension pipe socket joint; and

(4) Air through all other ironwork joints or cracks between the bottom ascension pipe joint and the exhauster.

The various direct inlets for the inert gases carbon dioxide and nitrogen are detailed in Nos. 1 and 2 above, while the inlet for oxygen and nitrogen—that is, air—are included in Nos. 3 and 4, but the inert gases carbon dioxide and nitrogen are also introduced into the gas, often in considerable quantity, if air is being drawn in through the joints detailed in No. 3 above. In this latter case much gas can be burnt in the vicinity of the mouthpiece and ascension pipe should air be admitted while there is still a sufficiently high temperature to ignite the gas. The result of this is, of course, (*a*) to raise the temperature considerably in the ascension pipe, and (*b*) to turn the coal gas into the inert gases carbon dioxide and nitrogen.

Putting the Retort Plant under Pressure (No. 3, "JOURNAL," Feb. 10, 1943).

It is to stop this latter ruinous result that the Author stressed several times in the earlier Articles the adoption of the excellent and most helpful practice of placing the retort plant under 1 in. of pressure every day and noting all the points at which gas escapes, which shows the precise points at which air is entering when the retort plant is in its normal state—that is, under vacuum. This is the positive cure for the really serious effects of overpulling, provided, of course, that observation is followed by the necessary action of stopping the leaks.

If this evil effect of overpulling be seriously tackled and stopped, that is, no air or virtually no air is admitted into the retort plant, the rest of the problem is simple in comparison, and is confined to the exclusion of any undue proportion of inert gases as detailed in Nos. 1 and 2 above. No air is admitted through the retorts, but only CO_2, N_2, and at times some proportion of CO also if producer gas be admitted into the gas on the combustion chamber side of the retorts.

To cure undue dilution of the gas by these waste gases it is essential to examine the retorts when empty, and repair and keep repaired all holes and cracks. This merely requires determination on the part of the management, which obviously must provide repair paddles and fire cement so that the foreman and stokers have no excuse for charging coal into unrepaired retorts—unfortunately a frequent occurrence in too many works.

When the air has been stopped from entering, and when holes and cracks have been repaired, the manager can expect to see an excellent improvement in results, indicated by the quality of the gas rising, which permits an intelligent increase in the pull, so obtaining as good gas the therms which were lost through holes and cracks in the retorts, and the therms lost by combustion in the ascension pipes and lost by the baneful results of stopped pipes. It must be realized that a little pull in measurement actually produces a very great deal in result, and consequently it calls for a good retort house governor, which will give the precise result required. So much for overpulling.

Adjustment of Primary Air Slides (No. 3, "JOURNAL," Feb. 10, 1943).

Since writing the article in which adjustment of air slides was dealt with, the Author has visited a works where the manager, recognizing that the clinkering doors were warped and could not be tightly shut, had taken the trouble to measure and calculate the amount of air space between each door and its frame, through which primary air could pass. He then reduced the primary air openings by the precise amount required. Following on this fact, the Author passed on this idea to certain of the Managers in the Group, and as a result one Manager has informed him that due to the bad condition of the clinkering doors at one of the small works he had completely closed the primary air slides, and had found that there was sufficient leakage to provide all the required amount of primary air.

This is a tip which is worthy of adoption in works with bad clinkering doors.

Recording Pressure Gauge in Vertical Producer Flues (No. 4, "JOURNAL," Feb. 17, 1943).

One contributor asked for further information respecting several points dealt with in the article on the operation of vertical retorts. He appeared to be a little doubtful whether a pressure-recording gauge on the producer gas flue was necessary, to which the Author replied that in his opinion it was very advisable to fit a recording gauge at this point, as after all the pressure is only likely to be, say, 1/100th of an inch to 3/100ths of an inch, and therefore spot tests with such a slight pressure are not good enough.

Using Coals Blended with Fine Breeze (No. 4, "JOURNAL," Feb. 17, 1943).

He asked for further information respecting the mixing of fine breeze with coal, to which the answer was that breeze could not be used unless a good coking coal was being carbonized—and a good many verticals are using good coking coals—but with such coals the breeze must be quite fine, say, through ¼ in. mesh to dust, which could be used satisfactorily in the proportions of 5% to 10%, but the mixing must be thorough and no slapdash methods must be employed.

Use of Coke and Breeze in Producers (No. 4, "JOURNAL," Feb. 17, 1943).

The same contributor also expressed doubt whether it was advisable to use breeze mixed with coke in the producers, to which the Author replied that this was the practice at one vertical retort installation where the coke made for sale had been 10.23, 9.83, and 9.81 cwt. per ton of coal carbonized during the past three years with excellent gas-making results in addition. In this case upwards of 28% small screened breeze had been added to the producer fuel which was normally run of retort coke. At this particular works the producer gas had a consistent quality of 26–30% CO content. It was pointed out by the Manager of this particular Company that in using breeze in the producer it was important to watch (1) the water supply to the bars, and (2) the operation of the reducing valve controlling the steam supply, while (3) the producer gas off-take flues required regular and periodical cleaning. It was also pointed out that to make this system a success the works plant must be well adapted to this particular practice—that is to say, the producers and grate area must both be of ample capacity.

Partial Heating of the Retorts with Coal Gas (No. 4, "JOURNAL," Feb. 17, 1943).

He was also interested in the method of passing a proportion of the coal gas into the producer, in cases where each vertical retort is a large unit in comparison to the size of the works, with the result that it frequently happens that one retort is working far below its normal capacity, with disadvantages in several directions. The Author asked Mr. L. N. Burtonshaw, Engineer of the Rugeley Gas Company (and incidentally also of the Tamworth Gas Company) to explain this system in detail, and this he did as set out below. The Author makes no apology for including the description of this system in some detail, as he submits that it is of considerable general interest to those with vertical retorts.

Mr. Burtonshaw's Description of the Method Employed.

"The plant consists of 3 53-in. W.D. vertical retorts in single line, downwardly heated, with 2 producers on floor level, one sufficiently large for 4 retorts, the other for 2 retorts. Each retort has a nominal capacity of 5 tons per 24 hours, giving a total for 3 retorts of 15 tons= 250,000 cu.ft. per day of 475 B.Th.U.

"The scheme for partial gaseous firing of producer was first tried out with a view to increasing the coke 'made for sale' figure, which, due to the large retort units, was very low. The position at this time (1938) was roughly that 2 retorts had to be under fire to give a coal throughput of 7 tons per day. In other words, enough coke was being used in producers to carbonize 10 tons of coal per day—but only 7 tons was needed to meet the demand.

"The idea behind the scheme was to carbonize 9–10 tons per day and return the surplus gas above demand to the producer. Accordingly a 2-in. pipe was laid from the holder main to both producers. The gas is measured by a small wet station meter, and the rate of flow controlled by a calibrated cock on the outlet of meter. There is a further control immediately prior to the pipe entering the producers. After careful study of the conditions likely to arise from the introduction of coal gas, it was decided to put the supply in immediately above the normal incandescent zone. The supply was split in two and introduced into the front wall of producer, terminating some 2 in. from the inside edge of brickwork. The lower edge of the hole on the inside was cut at a slope to prevent coke or breeze building up and restricting gas flow. The amount of gas to be introduced to obtain best results was found by trial and effect, but no fixed figure could be decided upon. The amount was varied according to conditions as found by daily inspection of heats.

"A series of tests was made, copies of which are enclosed. It will be seen that the financial aspect of the scheme was studied, and the results show a definite saving in cost of manufacture. Apart from the

saving, however, I am of opinion that the great advantage of the system is that it permits two retorts to be gas-making all the time between scurfing periods, the surplus gas being sent back to the producer. This will be conducive to a longer working life for the retorts, as in previous light load periods we have had one retort under slow fire and then heated up for two days only per week. This continual heating up and letting down is, of course, damaging to the structure and shortens its useful life. In addition, considerable quantities of gas are lost at each heating up and letting down, as it is impossible to put the retort 'on the main' until the issuing gas is round about 450 B.Th.U., and it has to be taken 'off' when the C.V. gets to that figure. Coke is also lost by combustion during the time the retort is idle."

RESULTS OF TESTS—RUGELEY GAS COMPANY.

Five-week Period Prior to Coal Gas Firing, ended June 4, 1938.

Gas made	3,238,300 c.ft.
Coal carbonized ...	185 10 0
Coke for sale	43 6 0=4.7 cwt. per ton carbonized.
Tar	3,422 gall.

	T.	c.	Q.				£	s.	d.	£	s.	d.
Coal	185	10	0	@	25s. ton ...	...				231	17	6
Coke	43	6	0	@	32s. 6d. ton	...	70	7	3			
Tar	3,422	gall.		@	2¼d. gall.	...	32	1	7	102	8	10
						Net coal				129	8	8

= 9.59d. per 1,000 cu.ft., or 2.02d. per therm.

Five-week Period Using Partial Coal Gas Firing, ended July 23, 1938.

Gas made	3,838,800 cu.ft.
Gas to producer ...	1,119,900 ,,
Net gas	2,718,900 ,,
Coal carbonized ...	218 5 0
Coke for sale ...	82 16 0 = 7.6 cwt. per ton carbonized.
Tar	4,031 gall.

	T.	c.	Q.				£	s.	d.	£	s.	d.
Coal	218	5	0	@	25s. ton	...				272	16	3
Coke	82	16	0	@	32s. 6d. ton	...	134	11	0			
Tar	4,031	gall.		@	2¼d. gall.	...	37	15	9	172	6	9
						Net coal				100	9	6

= 8.86d. per 1,000 cu.ft., or 1.86d. per therm.

Vertical Retort Gas with 3.5% CO_2 Content (No. 4, "JOURNAL," Feb. 17, 1943).

One of the managers of a company with continuous vertical retorts pointed out that he had with success adjusted the steaming rate to produce gas with a CO_2 content in the region of 3.5%, and found that this practice had given him appreciably better results in all essential respects than previously when he had been operating the plant with a CO_2 content in the region of 5%.

Spacing of Boiler Firebars (No. 5, "JOURNAL," Feb. 24, 1943).

The Author was asked whether the design or spacing of the firebars in a boiler should be varied to suit different grades of fuel. If it is desired to use breeze of a size down to dust, it is clearly necessary to use the smallest spacing through which sufficient air will pass without undue restriction, say ¼ in., but for any other size of fuel the spacing can obviously be wider, though there is no object in providing for wider spacing than is necessary to feed the fire with all the air which it needs. Accordingly, for fine breeze the spacing should be, say, ¼ in. wide, while for fuels of larger size spacing of ½ in. is sufficient.

Series of Tests Carried Out at the Tenbury Gas-Works (No. 7, "JOURNAL," Mar. 24, 1943).

One correspondent referred to the excellent results obtained in the make of therms per ton of coal at Tenbury during the series of tests which were carried out in this little works, and asked whether such results could not be achieved at the other small works in the group. The Author replied that the cost of the control in chemists' supervision while these tests were proceeding was much above the means of a small undertaking. This indeed is and must be an inherent and unavoidable disadvantage in the case of any small gas undertaking.

Finally, the Author would like to thank his many correspondents who have made helpful suggestions with a view to making this series of articles as useful as possible to those who are struggling to do their best to bring about fuel economy in their works. He would also like to acknowledge with grateful thanks the help which has been given him by many of the Engineers in the Group, by Mr. H. F. Benham, his Personal Assistant, and his Secretary, Miss O. M. Townsend, both of whom have had a great deal to do in connexion with this work.

GAS SERVICE IN POST-WAR PLANNING*

By Dr. D. A. WINTER, Radiation Ltd.

APPLIANCE makers have spent, and will spend, much time and money upon investigatory work in attempts to give the best to the public. They have set themselves a high standard of performance on which their business reputations depend. They are under no delusions as to what reduction in their standards means, and they would be sorry to see any independent outside controlling body set up to dictate minimum standards, for they feel strongly that there would at once be open the invitation to design to the minimum and not to the maximum. The standard would inevitably be lowered, and the Gas Industry's reputation with the general public would suffer. We, as makers, depend upon the Industry's recognition of quality as a first essential when putting apparatus before the public.

The appliance manufacturer rarely comes into direct contact with the gas-consuming public. He has to rely upon information at second-hand (through the undertakings) in gauging the market and the public's wants. If this information is wrongly stressed even in the slightest degree the maker may be led astray and his designs suffer, to the detriment ultimately of the prestige of the industry. It is important that information of this type shall be accurate.

I have been much impressed in the last year or so by the lack of adequate data on appliances installed. We should have something more comprehensive to guide us. I would quote the annual appliance surveys of the electrical journal *Electric Trading and Radio Marketing* as an instance of what we might profitably emulate.

The next matter I would ask you to consider is the controversy all-gas *versus* gas and coke. We all know that of the average 300 therms in a ton of coal, the Gas Industry, by its current practice, can recover 75 therms as gas and 113 therms as coke. It has been shown to be technically possible to convert those 113 therms of coke into gas. On the merits or demerits of this I am not going to express an opinion, but will it not be a fact that for some considerable time at least the Industry will continue to be a gas and coke producer? That being so, both fuels must be given due recognition in selling. There has sometimes been a tendency to favour gas at the expense of coke. This is indefensible. Both gas and coke are purified, smokeless fuels made from coal by a sound chemical engineering process which itself is highly thermally efficient, and yields other products which are valuable chemically rather than thermally. Therefore, give coke its due recognition—and in doing so, bring out its best qualities. One matter affecting the public intimately is grading. There has been a multiplicity of names and grades in the past. These have been reduced to an agreed basis, recommendations on which have been published in a Report of the Committee of Enquiry on Coke Quality—Comm. No. 152 of the I.G.E. In a large number of cases these recommendations have already been implemented. In addition to accepting these, can we not also consider limits for ash and moisture content? We have sufficient variables in the combustion characteristics of the coke not to desire to add to them in these other respects. Moisture may be a little difficult, but ash content should be susceptible to better control.

Coke is not now the crude fuel it was in the past. Further, designs of coke appliances have progressed in many ways so that coke can be substituted readily for coal in open fires, boilers, and slow-combustion stoves. The degree of control of burning has also been much improved, so that long flame combustion on the one hand, or very slow combustion on the other, can be readily attained. Coke can never be as flexible or as immediately available a source of heat as gas, but it can be a valuable auxiliary, and, if relative pre-war prices are maintained post-war, it offers a means in conjunction with gas of bringing a smokeless fuel service well within the reach of the less wealthy sections of the community—those who hitherto have not been able to afford the "luxury" of smokeless fuels. To disregard coke would be criminal folly.

We are still far from the National Gas Grid (working on the same lines as the Electricity Grid), yet the Scott and Uthwatt reports recommend that gas services should be made available to country dwellers so that they may have the same benefits of heat on tap as the town dweller. It would seem, therefore, that in the interests of service to the community at large, some consideration will need to be given fairly soon to something resembling a National Gas Grid.

The control of pressure of supply of gas requires some consideration. This is, of course, bound up with the adequacy or otherwise of the distribution system. It is not enough merely to ensure that the minimum statutory requirement is met, for much disservice to the reputation of gas can be done by widely fluctuating pressures. One answer, and one which has been more and more considered in the past, has been the provision of governors either on the appliance or on the service. The former are preferable, since it is technically unsound to expect full control to be exerted by a governor on a service which at times may be passing only 5 cu.ft./hr. (on which, however, adequate control is essential—*e.g.*, pilot lights on water heaters or simmering burners on the hotplate) and at others 250 cu.ft./hr. (as when an instantaneous water heater and a fire, with possibly also part of the cooker, may be functioning simultaneously). Appliance pressure governors are preferably set to work at 25/10 or 30/10 in. W.G. outlet, and this means that the minimum pressure of supply at the governor inlet must always be above these limits. On the other hand, the gas

* From a Paper to the Midland Junior Gas Association.

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pressure should not fluctuate so as to touch peaks in excess of 50/10 in. w.g., for pressures in excess of this throw an unwarranted strain on governor diaphragms. A steady pressure is required for the best service.

It is probable that appliance governors will be called for as an essential part of the post-war gas appliance.

The last point of national interest I am going to touch upon is competition or collaboration with other fuels. It is of interest to the appliance maker in its impact upon his commercial policy. It appears evident that it is the intention of the Ministry of Fuel and Power to sponsor greater collaboration in the interests of conservation of national resources, and such is wholly desirable. This will not mean that all competition is eliminated, but it should mean that all unnecessary competition is avoided by a demarcation of spheres of influence. We have the opportunity now of laying the foundations of a vast planned structure for the fuel industries in which the Gas Industry can take its rightful share—a share not in spite of, and disputed by, other fuel industries, but one which is allocated to it by merit. That share will not be small, and our task is to see that the Industry is able to play its part worthily, not hampered by the old traditions, yet recognizing the value of them as a background.

Turning now to matters more closely affecting the individual undertaking, we have seen in the past the gradual growth of the idea of service after sales. The widespread use of the hire purchase system, in addition to the earlier simple hire system, has led both the user and the undertaking to ask for appliances which require the minimum of service attention. Even so, some maintenance must be given, and it is this attention with which the expression "service after sales" is mainly concerned. The Industry will need to consider how far the scope of these activities can be widened. On the one hand there is the cost to the undertaking itself, to be balanced against the increase in goodwill accruing from satisfied users—a matte rwhich is not susceptible to precise definition. There is danger in excessive maintenance, for the idea is likely to arise that there is something unreliable either in the gas supply or in the appliance using the gas. The ideal, of course, is the axiom of "fit and forget," but unfortunately such is the nature of the processes involved in generating heat from town gas that this ideal can never be wholly achieved.

The appliance manufacturers on their side have, as you are aware, set up research and experimental organizations in an endeavour to offer to the gas-using public appliances which shall be as good as the present technical knowledge, coupled with reasonable manufacturing costs, allow. The present sound position of the Gas Industry is an indication that this action on the part of manufacturers is well founded. The assistance which has been freely rendered by gas undertakings in general in this respect should be acknowledged, for it is common practice and a necessary precaution at present on the part of manufacturers to submit samples of appliances to selected undertakings covering the whole range of gas manufacturing practice, in order to ascertain whether the design is sufficiently flexible to cope with the varying district conditions. You will notice that at once we are brought back again to the question of closer standardization, for manufacturers have to accept what is given them in the way of gas supply—they have no control over this aspect. May I appeal for reciprocal co-operation in this matter in the interests of the user of gas who is also the user of the gas appliance? The appliance cannot work without the gas, just as the gas cannot meet the needs of the user without the appliance.

Local circumstances will, of course, determine the most appropriate conditions for gas manufacture—such matters as quality of coal available and demand for coke will have a bearing upon the declared calorific value. Many undertakings during wartime have found that for one reason or another they need to reduce their declared calorific value. If these conditions are also applicable in normal times, it is suggested that consideration should be given to the various factors involved in an attempt to decide whether some standard or calorific value, and more broadly of the whole of gas quality, cannot be specified so that the variations from district to district are considerably reduced. The manufacturer, when he designs an appliance using the particular gas supply available in his district, would like to be reasonably certain that the design of that appliance will be satisfactory with the minimum of modification throughout the country. It is, of course, always possible to design an appliance to suit a specific gas, but this is obviously most uneconomical when the possible legitimate variations at present in vogue are remembered. To take a case in point, we frequently meet demands for fixed injectors. If we were to accede to these requests absolutely it would mean that we should have to carry stocks of injectors differing in small degrees to cover a considerable range, and with any assembly we should have to take extreme care to see that the correct injectors were fitted in the appropriate cases. This sounds fairly simple, but is not so simple in practice when you may have, say, 5,000 cookers per week going through the shop to fulfil orders for any or most of the different undertakings throughout the country, to say nothing of export orders. The supervisory costs alone would be prohibitive.

From our point of view we want to be assured that the user of our appliance anywhere shall be able to obtain the best service he or she requires, irrespective of whether the undertaking, through whom the appliance is provided in practically every case, is able to take from us 100 or 10,000 cookers a year. I make no apology for thus presenting the manufacturers' case, because some of the requests that we receive would appear to an unbiased judgment to be very one-sided in their implication. Another pertinent matter is the request for specials—small variations from the standard model which nevertheless call for special attention on our part, with consequent special instructions, special inspection, and their attendant costs. The whole of these costs would not be borne by the undertaking demanding the special; part would of necessity be transferred to all other business, so that in fact the cost of the demand for a special by one undertaking would be subsidized by all others—which is inequitable and yet unavoidable. Individual undertakings thus have a responsibility to their fellows in this respect.

One of the results in the increased technical attention paid to the design of gas appliances has been to increase their effectiveness. Thermal efficiencies as such have increased, and although this means that more is obtained from the gas used, it does not mean that less gas is used; rather the reverse, as records show. The increased effectiveness is shown by the willingness of the consumer to use gas for a great variety of purposes even in the one type of appliance. For instance, as its name implies, the prime function of the gas cooker is to cook food. It is, however, much used for such operations as preserving, and especially for bottling, fruit, &c., or drying vegetables. The gas-operated refrigerator is an entirely modern usage for gas, and the growth in use of the gas fire has followed the pioneer work of manufacturers in the investigations of the inner workings of the fire in order to get the best out of it, as regards both amount and quality of heat generated. The field for water heating is generally conceded to be largely untapped. Statistics indicate that the usage of hot water is well below desirable standards on the average, probably because facilities have been lacking in the past. We are, in fact, still in the stage of having to sell the idea of hot-water usage to the public, and until this idea is firmly established, our water heaters, efficient as they are, will simply not be used.

You will know that there are efficient coke or gas operated water heaters available to satisfy any and every type of domestic and industrial demand, but unless the demand is there the heaters lie idle. The demand is largely a question of education of the public. Once the demand has been created, the running cost must be sufficiently low to ensure good value for the money spent. To cheapen the running cost on gas for both space and water heating will call for the institution of two-part tariffs to a greater extent than has been customary hitherto. The initial cost of the appliance is fixed by considerations largely outside the operation of demand, but the running cost is a recurring expense and one which is more in the mind of the user. If the running cost can be kept down there is an obvious inducement to use the apparatus and fuel. It is suggested that an objective should be aimed at of at most a standing charge in the region of 2½d. per day, with a commodity charge of 4d. to 5d. a therm. If charges less than this can be achieved, so much the better. The cooking load is well established, but the space heating, water heating and refrigeration loads, calling as they do for a less intermittent use of gas, tend to increase the running costs outside normal bounds on present rates of charge.

The luminous flame has great advantages over the aerated flame—silence and practical elimination of maintenance are perhaps the most important—but there are also disadvantages. For instance there is one optimum flame shape for each size of jet, and this calls for constancy of gas characteristics to a high degree if the best conditions of working are to be maintained. A certain latitude is permitted, but if this becomes too great the effectiveness suffers. This is seen particularly in gas fires, where the heated appearance may fall off due to uneven spreading of the flames when conditions are at the extremes of the tolerance. There is also a fundamental difference between the use of the luminous and aerated flames caused by their different mechanism of combustion. The aerated flame burns in two stages. The first, commencing at the inner cone edge, must never be interfered with if bad combustion is to be avoided. The second, commencing at the inner edge of the outer mantle, where the partly burned gases finish their burning, may be interfered with to a certain extent without detriment. Thus we are able to permit flame contact under kettles and in gas-fire radiants, and so, with the latter, to attain an incandescence with perfect combustion that results in a relatively high emission of radiant heat. Naturally the radiant must be "tailored" to fit the flame for the best results, but the underlying principles of this are well known and present no difficulties of execution. No such breaking of the hot combustion zone is permissible in a luminous flame. The burning takes place in one external zone, and even the slightest obstruction in this zone will produce bad combustion. When a luminous flame is used, therefore, reliance must be placed upon concentration of the hot gases into a space into which the minimum excess air is allowed to enter, and with boundaries of an insulating nature to conserve the heat.

Radiation depends in either case upon the attainment of a temperature above the surroundings. Since the output is proportional to the fourth power of the absolute temperature attained, as the temperature gets higher the output increases considerably. Incandescence is readily attained with an aerated flame, but not so easily with the luminous flame, and only by very careful design using optimum conditions can thermal efficiencies with the latter be made to approach those with the former. The luminous flame is not the final solution to all difficulties, but its successful incorporation in gas apparatus to achieve results which are technically as satisfactory as with the earlier type of flame marks a considerable step forward.

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PRODUCTS PRICES—STOCKS AND SHARES

The London Market Nov. 15.

All Coal Tar Products are in good demand, and Pitch in the London area remains about 45s.

The new Coal Tar Products Prices Order, 1943 (S. R. & O. 1528), which comes into force to-day, fixes the prices at which Coal Tar Oils may be sold for various specified purposes. It also confirms the prices which may be charged for other Coal Tar Products under earlier Orders.

An Order entitled The Control of Toluene (No. 3) Order, 1943 (S. R. & O. 1943, No. 976), came into force on July 20, and introduced certain changes in the prices for different grades of Toluene.

There are no changes to report in the prices of Coal Tar Products.

The Provinces Nov. 15.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 1s. 11d. to 2s. 1d., pure, 2s. 7½d. (controlled by the Control of Toluene No. 3 Order, dated July 14, 1943, operative from July 20, 1943). Naphtha and Xylole controlled by the Coal Tar Naphtha and Xylole Order, 1943, dated May 31 (S. R. & O., 1943, No. 768), operative from June 1. Carbolic acid, 60's, naphthalene, and anthracene controlled by the Coal Tar Products Prices Order S. R. & O. 2509, dated Dec. 7, 1942, and operative from Jan. 1, 1943. Filtered heavy oil (min. gr. 1,080), 7½d. to 8d. Creosote oil has been generally controlled as to direction and price for some time past. Current value—fuel grades 5d. to 5¼d.; timber preservation and other purposes 4¾d. to 6d.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Scotland Nov. 13.

Certain grades of Creosote are now price controlled under S.R. & O. 1528. Refined tar*: Yield to Distillers is 4½d. per gallon *ex* Works, naked. Creosote oil: Timber preserving quality* 5¼d. to 6½d.; hydrogenation oil,* 5⅞d.; low gravity or virgin oil,† 7¼d. to 7½d.; benzol absorbing oil,* 6½d. to 8d. per gallon. Refined cresylic acid* is changing hands in substantial quantities at 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha†: 6½d. to 7d. per gallon. Solvent naphtha*: Basic prices delivered in bulk, 90/160 grade, 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 3d. per gallon. Pyridine†: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

* Price controlled. † Uncontrolled.

Our Scottish Market Correspondent appends the following explanatory note to his report this week:

Under the Coal Tar Products Prices Order S.R.& O. No. 1528, 1943, now published, most Coal Tar Products are price controlled, generally similar to the previous Order No. 2509 of 1942 now cancelled. The main difference is that creosote oil is now brought under price control where it is used for timber preserving, for benzole absorption, and for the manufacture of disinfectants (the hydrogenation quality having been previously controlled). These new prices are incorporated in our Scottish market report published this week. It is worthy of note, however, that oils such as virgin oil and middle oil which must be further processed, under direction of the Controller, have no specified prices attached to them although naturally they will be anchored to the price-controlled qualities. In the case of creosote oil for timber preserving, the price for bulk supplies in minimum tank wagon quantities is 5½d. per gallon, but where delivery is given in drums or barrels and the quality is liquid after standing for 3 hours at a temperature of 10°C., an extra 1d. may be charged. It is not proposed to publish each week the prices of creosote for disinfectant manufacture, but these are as follows:

Minimum 30% acids	...	1s. 7d. per gallon		
,, 25% ,,	...	1s. 5d.	,,	*Ex* Works, naked.
,, 20% ,,	...	1s. 3d.	,,	
,, 15% ,,	...	1s.	,,	
Under 15% ,,	...	10d.	,,	

Where these oils have been refrigerated, the prices can be increased by 2d. per gallon. All the above prices are basic prices to which certain specified extras may be added.

Merchants should note that under paragraph 53 provision is made for merchants' commission of 3% where crude coal tar acid or distilled crude coal tar acid is sold, with permission of the Controller, for purposes other than the production of phenol and the production of 11th Schedule acid. This is, of course, acid with under 2% phenol, but it has been found necessary on occasions to authorize some acids with a slightly higher percentage of phenol to be sold for ordinary purposes, although technically they come under the category of crude coal tar acids or distilled crude coal tar acids.

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The undermentioned price changes occurred during the week on the Stock Exchanges:

OFFICIAL LIST

Associated Gas & Water Undertakings Ord. (x.d.)	20/9—21/9	Nov. 8
Ditto Deferred (x.d.)	21/—22/—	,,
Ditto 4½ p.c. Red. Cum. Pref. (x.d.)	19/3—20/3	,,
Ditto 4 p.c. Red. Cum. Pref. (x.d.)	19/6—20/6	,,
Ditto 4 p.c. Cum. Pref. (x.d.) ...	17/6—18/6	,,
British Ord.	110—115	+2
Commercial Ord.	67—70	−1
Gas Consolidation "B" Ord. (x.d.)	19/—21/—	Nov. 8
Ditto 4 p.c. Red. Cum. Pref. (x.d.)	18/—20/—	,,
Oriental	115—120	+3
Primitiva Holdings Ord.	10/6—12/6	−1/-
Ditto 6 p.c. Cum. Pref.	101—106	+2
South Metropolitan Ord.	84—89	−2
United Kingdom Gas Corporation Ord.	21/3—22/3	—/3d.

SUPPLEMENTARY LIST

Gas Consolidation "A" Ord. (x.d.)	18/—20/—	Nov. 8

PROVINCIAL EXCHANGES

Newcastle Units	23/9—24/3	—/3d.
Sheffield Cons.	136—139	−½

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